Space Weather Forecast

Issued on Friday 29 November 2024 at 13:29 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Low to Moderate Activity. Coronal Mass Ejection arrival 29 November with potential for Minor Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low during the past 24 hours, with only Common class activity observed. There are eight active regions currently on the Earth-facing disc. The largest of these are both in the southwest, one with moderate magnetic complexity. However, they have remained relatively inactive. A new region emerging in the southeast limb may be one region or two separate regions - for the time being it is classified as one region but this may change as it moves into a clearer viewing angle. The other regions are generally smaller and simpler, with no sign of notable growth or development.

A partial filament (a plasma and magnetic rope structure) eruption was observed occurring in the southeast quadrant, early on 28 November. The accompanying Coronal Mass Ejection (CME) has been analysed, and while most of the material misses Earth there is a chance of a slight impact on 02 December.

Solar Wind / Geomagnetic Activity: Solar wind speeds increased from slow to slightly elevated levels early on 29 November due to arrival of a CME which left the Sun on 25 November. Total magnetic field strength was generally weak or moderate at first, reaching strong levels briefly due to the CME arrival before returning to moderate levels. The north-south component of the magnetic field briefly reach moderate negative levels, but otherwise was mainly weakly positive. Geomagnetic activity was Quiet throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected with a chance of isolated Moderate-class flares. There is a slight chance of Strong flares.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 25 November arrived on early on 29 November and is currently affecting the Earth. A further CME is forecast to arrive on 02 December. This second CME is currently forecast to glance the Earth, giving limited impacts. Otherwise mainly background solar winds are expected with only a weak coronal hole in the

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forecast. CME enhancements are expected to ease later today with Quiet to Unsettled conditions following for the remainder of the forecast period, although there is a chance of the glancing blow CME arrival through 02 Dec temporarily increasing activity to Unsettled, with a slight chance of Active intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background levels with only a slight chance of solar radiation storms occurring.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	1	20
Strong	G3	No	1	1	1	0
Severe	G4	No	1	1	1	0
Extreme	G5	No	1	1	1	0

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	40	40	40
Very Active	R3-R5 (X Class)	No	5	5	5	5

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	10	15	15
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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